DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23651-5000

REPLY TO ATTENTION OF

ATCD-N (71-1f) 26 May 1988

SUBJECT: ROC for the NBC Protective Covers

MEMORANDUM FOR: SEE DISTRIBUTION

1. HQ, TRADOC and HQ, AMC approved subject ROC (encl) on 5 Apr 88. The following information is applicable to this document:

a. System Designation: IPR.

b. Materiel Developer: AMC.

c. Combat Developer: TRADOC (Chemical School).

d. User Representative: TRADOC (Chemical School).

e. Trainer: TRADOC.

f. Logistician: USALEA.

g. Operational Tester: TRADOC.

h. Cards Reference Number: 1259.

2. Subject requirements document is forwarded for information.

3. Reference AR 71-9, 20 Feb 87, Materiel Objective and Requirements.

FOR THE COMMANDER:

T. G. SUTTON
MAJ, GS
Chief, Publications and Records Management Division

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ATCD-N
SUBJECT: ROC for the NBC Protective Covers

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REQUIRED OPERATIONAL CAPABILITY (ROC)

1. Title:

a. NBC Protective Covers (NBC-PC).

b. Category: Non-major.

c. CARDS Reference Number:

2. Need/Threat.

a. Need. A capability is needed to protect supplies and equipment from liquid chemical agent contamination, radiological fallout, and biological agent contamination. By providing a barrier between the articles and possible NBC agent contamination, the Army's burden for decontamination will be eased. The NBC-PC will also reduce the spread of contamination, help prevent casualties, and make supplies and equipment more readily available in an NBC environment. The NBC-PC will allow units at all levels to better implement current doctrine on contamination avoidance with minimal logistical impact.

b. Threat. The Soviets are expected to use chemicals in future armed conflict with NATO. They possess weapon systems capable of delivering large amounts of chemical agents anywhere on the battlefield to create casualties, deny terrain, and to maintain the offensive momentum by slowing a NATO response to their attack. Artillery, multiple rocket launchers, missiles, rockets, and aircraft will be used to deliver chemical munitions. Soviet doctrine provides that massive quantities of chemical agents be delivered in a surprise attack against unprotected troops and equipment. Non-persistent agents would be used against forces occupying defensive positions immediately forward of the Soviet axis of advance. Persistent agents would be employed against troop concentrations, artillery, nuclear delivery systems, airfields, and logistical sites in the rear area. Use of persistent chemical agents will maximize the decontamination burden and degrade personnel effectiveness by causing troops to be in protective clothing for extended periods of time. The 1972 Biological and Toxin Weapons Convention prohibits the development, stockpiling, or acquisition of BW agents and weapons. However, available information and U.S. technical analysis point strongly to Soviet biological research and development activities that exceed those normally expected for biological warfare protection purposes. The Soviets, through the use of nuclear weapons, have the capability of creating large-scale contamination from nuclear fallout. Although armed conflict between NATO and the Warsaw Pact

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is considered the primary threat, other hostile nations have the capabilities to employ CW and BW weapons. In the recent past chemical agents and suspected toxins have been used. Although not a primary target, the proposed NBC-PC is vulnerable to physical destruction from a wide range of threat weapons systems which are targeted at the supported elements.

3. IOC: 1QFY89.

4. Operational and Organizational Plan.

a. The NBC-PC will be used to cover supplies, pallets, equipment, etc., to provide the Army with a readily available and versatile contamination avoidance measure. It can also be used to provide cover for a variety of other uses: (1) overhead contamination protection for individual and crew-served weapons fighting positions, maintenance work areas, and entryway to a collective protection shelter, and (2) impermeable ground cover for MOPP gear exchange operations , as well as the entryway to collective protection shelters. After becoming contaminated, the NBC-PC will be removed, buried, and replaced.

b. Under the provisions of CTA 50-970, the NBC-PC will be issued to, used by, and maintained by combat, combat support and combat service support units in all geographic operational areas of interest, to include land combat and amphibious landing/assault operations. Maintenance will consist of inspection only.

5. Operational Characteristics. The NBC-PC will--

a. prevent through the cover penetration of liquid chemical agents (includes residue), biological agents, and fallout particles up to 72 hours after contamination, with a goal of 168 hours. Layering of the NBC-PC is permissible to obtain the requisite time coverage but is not desirable.

b. be durable enough to:

(1) retain protective characteristics for a minimum of 45 days of use prior to NBC contamination.

(2) retain NBC protective characteristics when subjected to POL contamination or naturally occurring contaminants.

(3) retain NBC protective characteristics along the crease (see para 5h).

c. not increase the likelihood of detection by thermal or radar attenuating/E-O sensors.

d. have a standard non-reflecting camouflage pattern on at least one side. All three patterns (desert, woodland, and arctic) will be utilized.

e. be puncture, tear, and crack resistant under normal operational use. Soldiers will use organic, e.g., bayonet, or field expedient means to cut holes for tie-downs. Tie-downs will be field expedient, e.g., rope/twine. When tied-down, the NBC-PC must withstand the upper limits of windspeeds normal for Europe, SWA, and NWA.

f. be expendable, after use.

g. be storable in Climatic Design Types Hot, Basic, and Cold as defined in AR 70-38.

h. be available in 12' and 20' widths. The length of the NBC-PC material on the core will be such that the total weight of the NBC-PC material, core, and packaging does not exceed the weight that two representative soldiers (50 percentile male) can lift. The packaging of the NBC-PC will be such that the core will be no longer than eighty-eight inches.

i. be transportable by air, rail, sea, and ground vehicles.

j. be self-extinguishing (i.e., does not continue to burn when the source of flame is removed) and produces no toxic smoke when burning.

k. be marked at regular intervals (1 meter). The process used to produce the interval markings will not degrade the physical, protective, or camouflage characteristics of the NBC-PC.

l. will be effective under these battlefield conditions: dust, smoke, aerosols, rain, fog, salt water spray, salt fog, haze, sleet, and snow.

m. not require quantitative reliability, availability, and maintainability (RAM) requirements.

n. be able to be written on using readily available indelible markers to allow easy marking and identification of content or time in use.

o. will not require nuclear survivability for initial nuclear radiation, thermal, blast, and EMP effects.

p. will have minimum shelf-life of ten (10) years.

6. Technical Assessment. The technical risk of fielding the NBC-PC is low. The materiel developer will evaluate both U.S. and foreign candidates to select one that satisfies the requirements. Other countries have developed multiple reinforced plastic sheeting to be used as CB protective covers.

7. System Support Assessment. The Army Logistics Supply System will support the acquisition and fielding of the NBC-PC. There will be no impact on tools, Test Measurement and Diagnostic Equipment (TMDE), personnel or MOS's. A System Support Package (SSP) will be developed and validated prior to Initial Operational Capability (IOC). The system will be fielded using the Materiel Fielding Total Package/Unit Materiel Fielding concept.

8. MANPRINT Assessment.

a. Manpower/Force Structure Assessment. No additional manpower requirements will be incurred as a result of the fielding of the NBC-PC. No additional transportation assets will be required to transport the NBC-PC.

b. Personnel Assessment. Soldiers of all MOSs and skill levels will be capable of employing and maintaining the NBC-PC. No new operator or maintenance MOS will be required.

c. Training Assessment. No institutional training will be required. Unit and individual training will consist of supervised on-the-job training and refresher training utilizing the technical manual. There is no requirement for a New Equipment Training Team (NETT). Training Aid Materiel and a Training Test Support Package (TTSP) are not required.

d. Human Factors Engineering (HFE). Two soldiers (see para 5g) dressed in MOPP IV can employ the NBC-PC.

e. System Safety. The NBC-PC will not present any uncontrolled residual system safety hazards to personnel throughout the life cycle of the system.

f. Health Hazard Assessment (HHA). An HHA will be requested IAW AR 40-10.

9. Standardization and Interoperability.

a. Other U.S. service interest in the NBC-PC is expected. To date the USMC has shown an interest.

b. Allied nations' capabilities relating to the NBC-PC are being assessed. A Phase I International Materiel Evaluation (IME) identified six foreign candidate materials. A Phase II IME began 4QFY86 and is expected to end 2QFY88.

10. Life Cycle Cost Assessment. See Annex A.

11. Milestone Schedule.

ROC Approval	1QFY88
IME Testing	2QFY87 - 4QFY87
MDR I & III	2QFY88
IOC	1QFY89

APPENDIX 1

RATIONALE:

a. The decontamination of supplies and equipment currently requires the diversion of critical personnel and materiel resources. Time may not permit decontamination operations. Under agent challenge, this system must provide continuous protection for the supplies for the longest mission time identified in the operational mode summary/mission profile of the supplies to be protected. General support units (GSUs) will have the most stationary (longest time) mission profile. Ammunition (class V), petroleum (class III), and repair parts (class IX) are the most critical classes of supply to tactical units in combat. Sustainment supply levels for class III (bulk) calls for a storage time (mission profile) of 3-4 days, packaged is 7-10 days; class V is 5-7 days while class IX is 15 days (30 days for Air Lines of Communication (ALOC), class IX parts). Class IX figures were not used as the basis for time requirements since weathering will neutralize agents within its 15-30 days of storage. Class III (bulk) requires a minimum of 3 days (72 hrs) and class V a maximum of 7 days (168 hrs). The NBC-PC may be layered to extend the time protection is provided.

b(1). Forty-five days is the doctrinal wartime-sustaining supply level of ALOC class II and class IX supplies for direct support units (DSUs). An NBC-PC should provide the required protection stated in "a" at any point of this 45 days.

b(2). As the NBC-PC may be used to cover POL stocks, any degradation of the protective characteristics of the materiel when contaminated with POL is unacceptable.

b(3). The cover will be folded on the core. Any degradation caused by the crease is unacceptable.

c. To minimize the threat's capability to target supplies.

d. Camouflage is required so as not to highlight the materiel being covered.

e. Excessive puncturing, tearing, or cracking in the materiel under normal operational use is not acceptable. Tie-down ropes and grommets are not provided. It must withstand the windspeeds of any geographical area in which it may be used.

f. The cover is intended to reduce the unit's decontamination requirements and is therefore not intended to be decontaminated but thrown away.

g. The NBC-PC must be capable of storage in all areas that U.S. Forces can expect to fight.

h. Rolls provide the greatest flexibility for transportation and storage. Twelve feet and twenty feet widths represent the sizes of currently fielded canvas tarpaulins used by supply units. Limited manpower resources restrict operational employment to two soldiers. Eighty-eight inches is the width of the cargo bed of standard supply trucks in TOE units.

i. The NBC-PC must possess the same transportability as the equipment it will cover.

j. Safety. A self-extinguishing cover will aid in protecting supplies by reducing the likelihood of fire.

k. This capability will allow the user to adapt the length of the cover to any size required. One meter is the international standard measurement for length.

l. The NBC-PC will have worldwide issue and must be capable of operating satisfactorily under all combat conditions.

m. Passive nature of the system does not lend itself to quantifiable RAM data.

n. Marking is required to identify contents being protected and easy assessment of time in use in the event of NBC contamination.

o. Sufficent quantities will be on-hand for replacement of those lost due to thermal and/or blast. EMP poses no problem due to no electrical components.

p. allows war reserves to be stocked without the decomposition of the protective characteristics of the covers.